

CLAIMS

What is claimed is:

1. A mobile aerial communications antenna assembly, comprising:
a mobile aerial assembly;

5 a transportation system operably connected to the mobile aerial assembly,
wherein the transportation system comprises a lift source operable for generating a lift
force, providing the mobile aerial assembly with maneuverability in three dimensions;

a communications system operably connected to the mobile aerial assembly,
wherein the communications system comprises a communications device operable for
10 transmitting and receiving a plurality of mobile communications signals; and

a control system in communication with the transportation system, the control
system operable for controlling the operation of the transportation system.

2. The mobile aerial communications antenna assembly of claim 1, wherein the lift
source is operable for generating a plurality of directional forces.

15 3. The mobile aerial communications antenna assembly of claim 1, wherein the
control system is in communication with the communications system, the control system
operable for controlling the operation of the communications system.

4. The mobile aerial communications antenna assembly of claim 1, wherein the
mobile aerial assembly comprises a support structure.

20 5. The mobile aerial communications antenna assembly of claim 1, wherein the
mobile aerial assembly comprises a protective housing.

6. The mobile aerial communications antenna assembly of claim 1, wherein the lift
source comprises a lift source selected from the group consisting of a propeller and a
ducted fan.

25 7. The mobile aerial communications antenna assembly of claim 6, wherein the lift
source further comprises a lift source selected from the group consisting of an electric
motor and a combustion engine.

8. The mobile aerial communications antenna assembly of claim 1, wherein the lift
source comprises a lift source selected from the group consisting of a blimp and a
30 balloon.

9. The mobile aerial communications antenna assembly of claim 1, wherein the lift source comprises a flight control device.

10. The mobile aerial communications antenna assembly of claim 9, wherein the flight control device comprises a flight control device selected from the group consisting of a servo mechanism, a rudder, a stabilizer, an aileron, a flap, a slat, and a deflection mechanism.

11. The mobile aerial communications antenna assembly of claim 1, wherein the communications device is operable for transmitting and receiving a plurality of mobile communications signals to and from a plurality of mobile communications devices.

12. The mobile aerial communications antenna assembly of claim 1, wherein the communications device comprises a cellular antenna.

13. The mobile aerial communications antenna assembly of claim 1, wherein the communications device is operable for transmitting and receiving a plurality of mobile communications signals to and from a plurality of cellular antennas.

14. The mobile aerial communications antenna assembly of claim 1, wherein the control system is operably connected to the mobile aerial assembly.

15. The mobile aerial communications antenna assembly of claim 1, wherein the control system is operably connected to the transportation system via a tether.

16. The mobile aerial communications antenna assembly of claim 1, further comprising a power source operably connected to the transportation system.

17. The mobile aerial communications antenna assembly of claim 16, wherein the power source comprises a power source selected from the group consisting of a battery, a fuel cell, a generator, a solar collector, and a fuel supply.

18. The mobile aerial communications antenna assembly of claim 16, wherein the power source is operably connected to the transportation system via a tether.

19. A method for using a mobile aerial communications antenna assembly, the method comprising:

providing a mobile aerial assembly;

providing a transportation system operably connected to the mobile aerial

assembly, wherein the transportation system comprises a lift source operable for

generating a lift force and a plurality of directional forces, providing the mobile aerial assembly with maneuverability in three dimensions;

providing a communications system operably connected to the mobile aerial assembly, wherein the communications system comprises a communications device
5 operable for transmitting and receiving a plurality of mobile communications signals;

providing a control system in communication with the transportation system and the communications system, the control system operable for controlling the operation of the transportation system and the communications system; and

maneuvering the mobile aerial assembly into an area of mobile communications
10 services demand.

20. The method for using the mobile aerial communications antenna assembly of claim 19, wherein the communications device is operable for transmitting and receiving a plurality of mobile communications signals to and from a plurality of mobile communications devices.

15 21. The method for using the mobile aerial communications antenna assembly of claim 19, wherein the communications device comprises a cellular antenna.

22. The method for using the mobile aerial communications antenna assembly of claim 19, wherein the communications device is operable for transmitting and receiving a plurality of mobile communications signals to and from a plurality of cellular antennas.

20 23. The method for using the mobile aerial communications antenna assembly of claim 19, wherein the control system is operably connected to mobile aerial assembly via a tether.

24. The method for using the mobile aerial communications antenna assembly of claim 19, further comprising providing a power source operably connected to the
25 transportation system and the communications system.

25. The method for using the mobile aerial communications antenna assembly of claim 24, wherein the power source comprises a power source selected from the group consisting of a battery, a fuel cell, a generator, a solar collector, and a fuel supply.

26. The method for using the mobile aerial communications antenna assembly of
30 claim 24, wherein the power source is operably connected to the transportation system and the communications system via a tether.

27. The method for using the mobile aerial communications antenna assembly of claim 19, wherein the area of mobile communications services demand comprises an area of temporary mobile communications services demand.

28. A method for using a mobile aerial communications antenna assembly in a search and rescue operation, the method comprising:

providing a mobile aerial assembly;

providing a transportation system operably connected to the mobile aerial assembly, wherein the transportation system comprises a lift source operable for generating a lift force and a plurality of directional forces, providing the mobile aerial assembly with maneuverability in three dimensions;

providing a communications system operably connected to the mobile aerial assembly, wherein the communications system comprises a communications device operable for receiving a mobile communications signal transmitted by a mobile communications device;

providing a control system in communication with the transportation system and the communications system, the control system operable for controlling the operation of the transportation system and the communications system;

maneuvering the mobile aerial assembly into a search and rescue area;

monitoring a signal strength of the mobile communications signal;

maneuvering the mobile aerial assembly in a direction of increasing signal strength; and

locating the mobile communications device.